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To:

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PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/CH2005/000142

International filing date (day/month/year)
10.03.2005

Priority date (day/month/year)
16.03.2004

International Patent Classification (IPC) or both national classification and IPC
F03D9/02, F02C6/14, F02C7/10, F03D9/00

Applicant
ABB RESEARCH LTD

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**International application No.
PCT/CH2005/000142**Box No. I Basis of the opinion**

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/CH2005/000142

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	6,7
	No: Claims	1-5,8-10
Inventive step (IS)	Yes: Claims	
	No: Claims	1-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/CH2005/000142

Re Item V.

1. Reference is made to the following documents:

D1: NL-A-8 005 063 (JOHAN WOLTERUS VAN DER VEEN) 1 April 1982
D2: GB-A-2 246 602 (DALE ELECTRIC OF GREAT BRITAIN) 5 February 1992
D3: US-A-5 436 508 (SOERENSEN JENS-RICHARD) 25 July 1995

2. The application does not meet the requirements of Article 6 PCT, because claim 9 is not clear.

The term "and/or" is vague and unclear and leaves the reader in doubt as to which steps are to be performed in the method. The current wording of claim 9 allows for possibility of either the steps of "transferring thermal energy from the heat storage device...." *or* "providing thermal energy...." in addition to the possibility of *both* steps being performed. In the context of the step of "heating a heat storage device..." the step of "transferring thermal energy...." must be present in order to avoid a lack of support from the description (Article 6 PCT).

The applicant is should replace "and/or" with the expression "and, if necessary, " (the basis for this is to be found on page 7, line 1 of the description).

3. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-5, and 8-10 is not new in the sense of Article 33(2) PCT.

- 3.1 With regard to claim 1, the document D1 discloses (the references in parentheses applying to this document) a system (see figure 2) for providing thermal energy to a thermodynamic machine for generating electrical power, comprising, a heat storage device (7) for storing thermal energy and a first heat transfer means (20) for transferring thermal energy from the heat storage device to the thermodynamic machine (25), first heat generating means (8) for heating the heat storage device with electrical power (see page 2, lines 27-32) and a second heat generating means (30) for providing thermal energy to the thermodynamic machine (page 3, line 34 - page 4, line 1).

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/CH2005/000142

The subject-matter of claim 1 is therefore not new (Article 33(2) PCT). The subject-matter of claim 1 is also entirely anticipated by the disclosure of document D2 wherein an excess of electrical energy is transferred to the cooling circuit of a back-up diesel engine which has been interpreted as a second heat generating means (see in particular page 7, lines 6-23).

- 3.2 The above objection to lack of clarity notwithstanding and insofar as its subject-matter can be interpreted, the same reasoning applies, *mutatis mutandis*, to the subject-matter of the corresponding independent method claim 9, which therefore is also considered not new.
- 3.4 Dependent claims 2-5, 8 and 10 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to novelty, as all the features of these claims are known from D1.
4. With respect to the subject-matter of claims 6 and 7, the choice of material such that the storage material is in a solid state at the lower or higher temperature levels of the heat storage device is merely a matter of design procedure (see for example document D3, lines col.5, lines 1-6) and cannot be regarded as involving an inventive step (Article 33(3) PCT).